

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:
a first substrate including first, second and third layers;
and
a second substrate including fourth, fifth and sixth layers;
wherein the first substrate provides an electric device,
wherein the second substrate provides a physical quantity
sensor, and
wherein the first layer of the first substrate and the fourth
layer of the second substrate are shields for protecting the electric
device and the physical quantity sensor.
2. The device according to claim 1,
wherein the first layer and the fourth layer are grounded.
3. The device according to claim 1,
wherein the electric device is disposed in the third layer
of the first substrate,
wherein the physical quantity sensor is disposed in the sixth
layer of the second substrate,
wherein the second layer of the first substrate is made of
an insulation layer so that the first and third layers are
electrically isolated, and
wherein the fifth layer of the second substrate is made of
an insulation layer so that the fourth and sixth layers are
electrically isolated.

4. The device according to claim 3,
wherein the physical quantity sensor includes a movable portion disposed in the sixth layer,

wherein the movable portion is movable in accordance with a physical quantity applied to the device so that the physical quantity sensor outputs a signal corresponding to a displacement of the movable portion, and

wherein the first substrate faces the second substrate so that the electric device electrically connects to the physical quantity sensor.

5. The device according to claim 4,
wherein the second substrate includes a bump disposed on the sixth layer of the second substrate,

wherein the third layer of the first substrate faces the sixth layer of the second substrate so that the first substrate electrically is connected to the second substrate through the bump, and

wherein the first layer of the first substrate and the fourth layer of the second substrate are disposed outside.

6. The device according to claim 5,
wherein the first and third layers of the first substrate are made of semiconductor,

wherein the fourth and sixth layers of the second substrate are made of semiconductor, and

wherein the electric device controls the physical quantity

sensor, and the physical quantity sensor outputs the signal to the electric device through the bump.

7. The device according to claim 6,
wherein the physical quantity sensor is an acceleration sensor,
an angular rate sensor or a pressure sensor,
wherein the first and second substrates are provided by
silicon-on-insulator substrates, respectively, and
wherein the electric device is a signal processor.

8. The device according to claim 1, further comprising:
a first loop layer disposed in the third layer of the first
substrate; and
a second loop layer disposed in the sixth layer of the second
substrate,
wherein the first and second loop layers are connected with
a loop bump, and
wherein the first and second loop layers with the loop bump
are shields for protecting the electric device and the physical
quantity sensor.

9. The device according to claim 8,
wherein the first and second loop layers with the loop bump
are grounded.

10. The device according to claim 8,
wherein the first loop layer surrounds the electric device,

wherein the second loop layer surrounds the physical quantity sensor, and

wherein the loop bump has a loop shape.

11. The device according to claim 10, further comprising:
a first shield layer disposed between the third layer and the second layer of the first substrate; and

a second shield layer disposed between the sixth layer and the fifth layer,

wherein the first loop layer is electrically connected to the first shield layer through a first contact portion,

wherein the second loop layer is electrically connected to the second shield layer through a second contact portion, and

wherein the electric device and the physical quantity sensor are covered with the first and second loop layers, the first and second contact portions, the first and second shield layers and the loop bump.

12. A semiconductor device comprising:
a first substrate including first, second and third layers;
and

a second substrate;

wherein the first substrate provides one of an electric device and a physical quantity sensor,

wherein the second substrate provides the other one of the electric device and the physical quantity sensor, and

wherein the first layer of the first substrate is a shield

for protecting the electric device and the physical quantity sensor.

13. The device according to claim 12,

wherein the first layer is grounded.

14. The device according to claim 12,

wherein the one of the electric device and the physical quantity sensor is disposed in the third layer of the first substrate,

wherein the other one of the electric device and the physical quantity sensor is disposed one side of the second substrate, and

wherein the second layer of the first substrate is made of an insulation layer so that the first and third layers are electrically isolated.

15. The device according to claim 14,

wherein the physical quantity sensor includes a movable portion,

wherein the movable portion is movable in accordance with a physical quantity applied to the device so that the physical quantity sensor outputs a signal corresponding to a displacement of the movable portion, and

wherein the first substrate faces the second substrate so that the electric device electrically connects to the physical quantity sensor.

16. The device according to claim 15,

wherein the first substrate includes a bump disposed on the third layer of the first substrate,

wherein the third layer of the first substrate faces the second substrate so that the first substrate is electrically connected to the second substrate through the bump, and

wherein the first layer of the first substrate and the other side of the second substrate are disposed outside, the other side of the second substrate being opposite to the other one of the electric device and the physical quantity sensor.

17. The device according to claim 16,

wherein the first and third layers of the first substrate are made of semiconductor,

wherein the second substrate is made of semiconductor, and

wherein the electric device controls the physical quantity sensor, and the physical quantity sensor outputs the signal to the electric device through the bump.

18. The device according to claim 17,

wherein the physical quantity sensor is an acceleration sensor, an angular rate sensor or a pressure sensor,

wherein the first substrate is provided by a silicon-on-insulator substrate, and

wherein the electric device is a signal processor.